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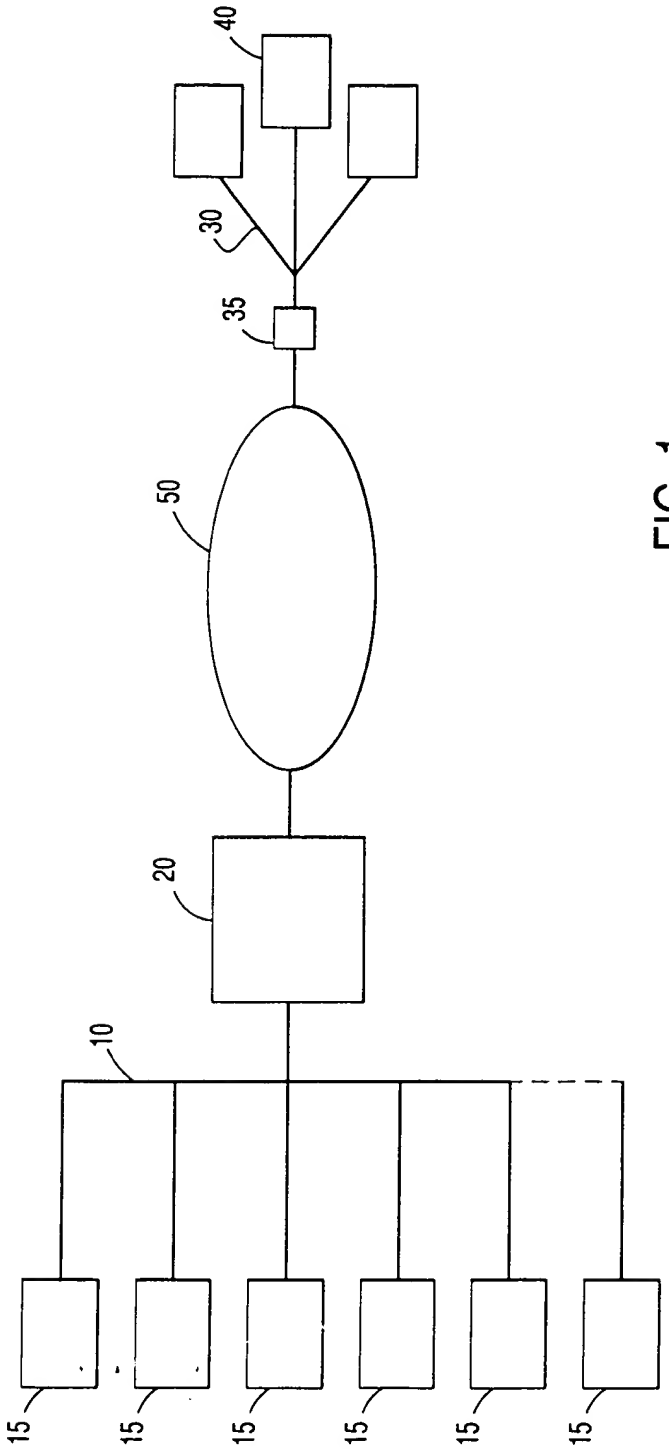

FIG. 1

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DECISION TREE FOR DATAGRAM FROM LAN

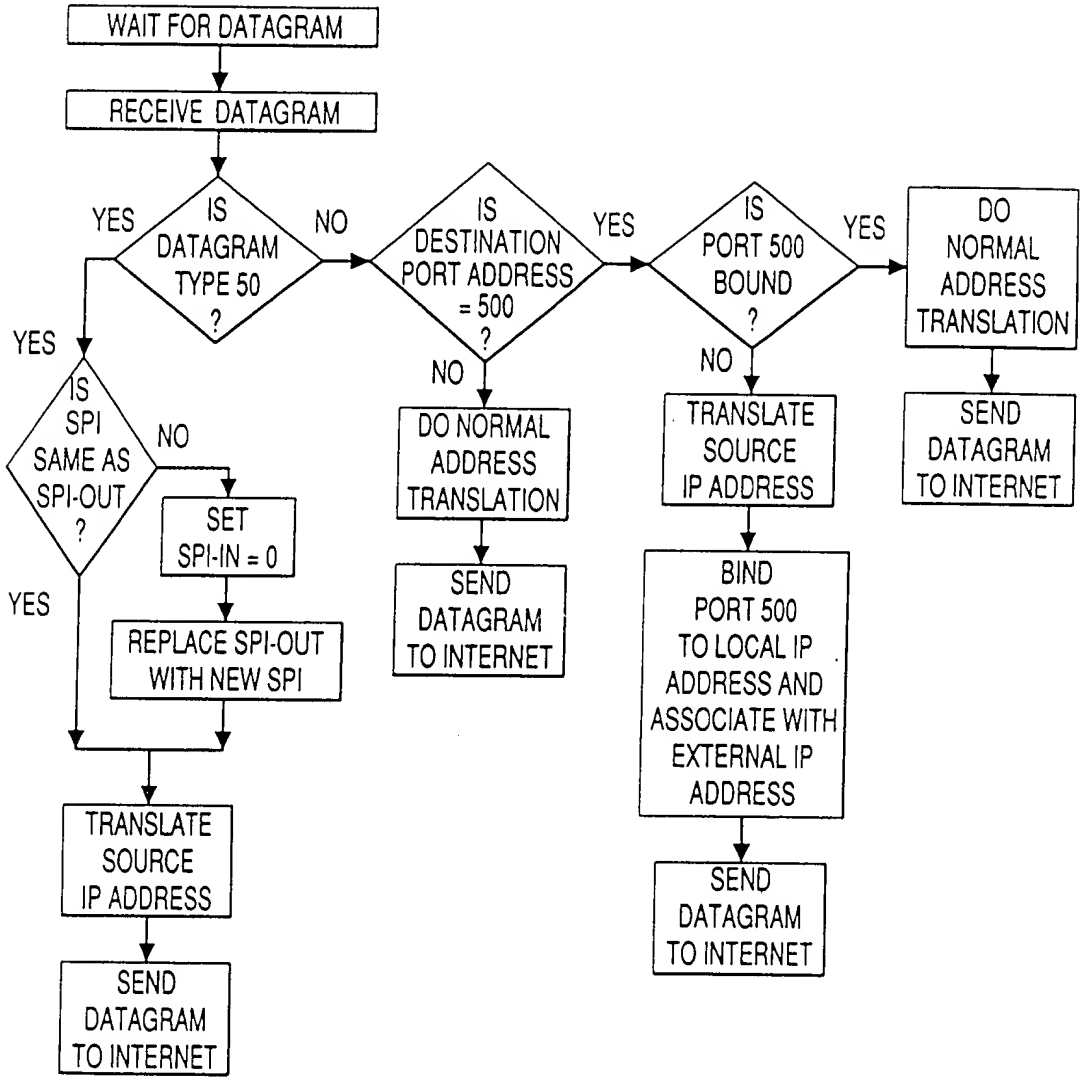

FIG. 2

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DECISION TREE FOR DATAGRAM FROM INTERNET

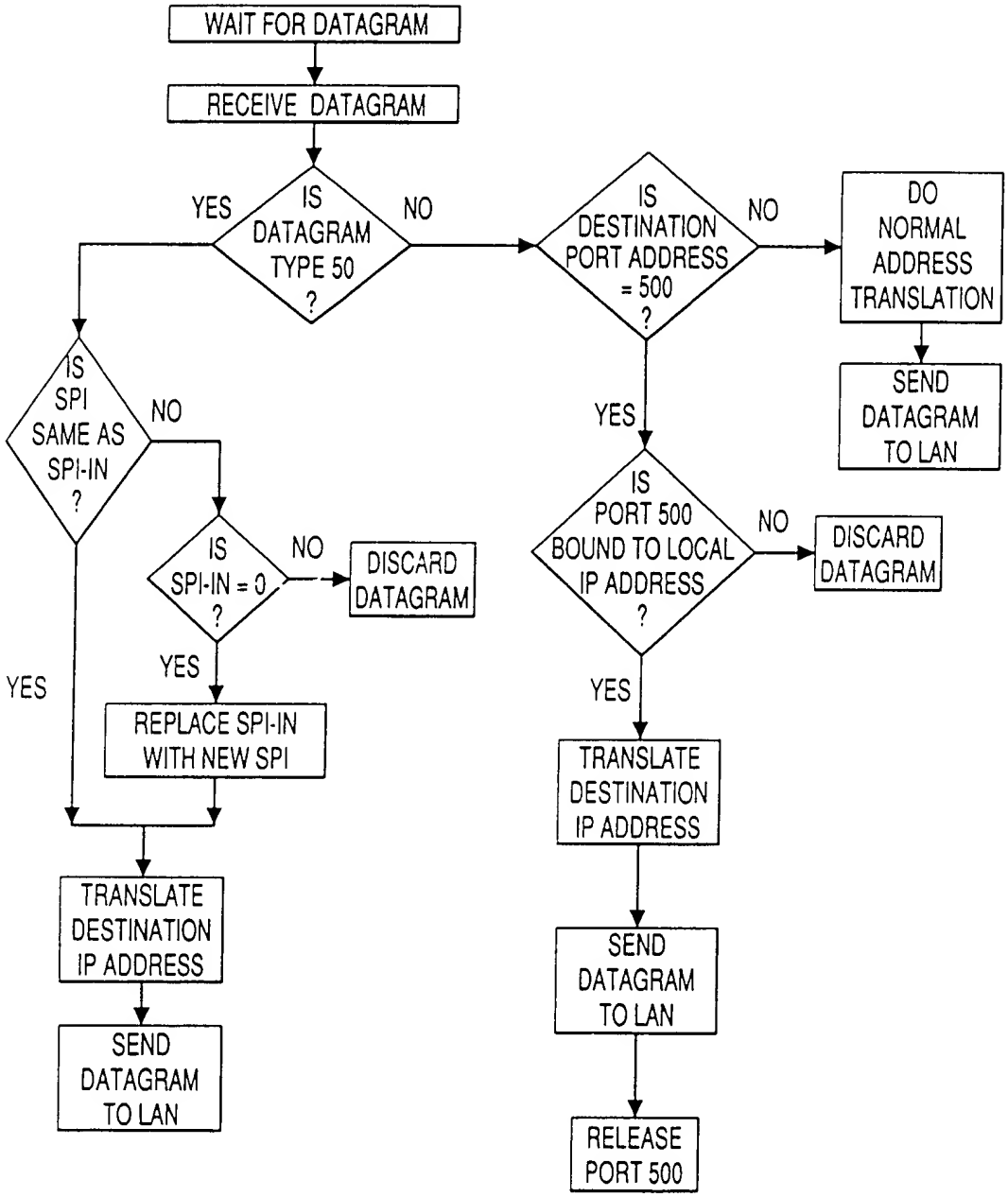

FIG. 3

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ID ADDRESSES				
	LOCAL COMPUTER	GATEWAY INTERNAL	GATEWAY EXTERNAL	TARGET
L-1	192.168.0.2	102.168.0.1	142.140.3.6	204.71.202.160 T-1
L-2	192.168.0.4	102.168.0.1	142.140.3.6	207.46.131.137 T-2
L-3	192.168.0.3	102.168.0.1	142.140.3.6	207.158.227.235 T-3

FIG. 4

SPI TABLE - 8 LOCAL COMPUTERS COMMUNICATING WITH 3 HOSTS				
	TARGET	LOCAL IP	SPI-OUT	SPI-IN
T-1	204.71.202.160	192.168.0.2 L-1	4859	9802
		192.168.0.5 L-X	52856	7000
		192.168.0.10 L-X	8565	8523
T-2	207.46.131.137	192.168.0.4 L-2	1353	6234
		192.168.0.7 L-X	2562	10125
		192.168.0.10 L-X	25763	12106
T-3	207.158.227.235	192.168.0.3 L-3	38935	7753
		192.168.0.8 L-X	9093	32828

FIG. 5a

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NEW SESSION - NEW SPI-OUT - SPI-IN SET TO 0				
	TARGET	LOCAL IP	SPI-OUT	SPI-IN
T-1	204.71.202.160	192.168.0.2 L-1	14662	0
		192.168.0.5 L-X	52856	7000
		192.168.0.10 L-X	8565	8523
T-2	207.46.131.137	192.168.0.4 L-2	1353	4562
		192.168.0.7 L-X	2562	10125
		192.168.0.10 L-X	25763	12106
T-3	207.158.227.235	192.168.0.3 L-3	8773	20889
		192.168.0.8 L-X	9093	32828

FIG. 5b

REPLY PACKET RECEIVED - NEW SPI-IN RECEIVED				
	TARGET	LOCAL IP	SPI-OUT	SPI-IN
T-1	207.200.0.2	192.168.0.2 L-1	14662	3288
		192.168.0.5 L-X	52856	7000
		192.168.0.10 L-X	8565	8523
T-2	206.23.5.120	192.168.0.4 L-2	1353	6234
		192.168.0.7 L-X	43966	17937
		192.168.0.10 L-X	25763	12106
T-3	207.198.75.3	192.168.0.3 L-3	8773	20889
		192.168.0.8 L-X	9093	32828

FIG. 5c

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SEQUENCE OF PACKETS THROUGH GATEWAY SINGLE LOCAL MACHINE -- SINGLE TARGET							
PATH	DATAGRAM TYPE	SOURCE ADDRESS IP	PORT	DESTINATION ADDRESS IP	PORT	SPI	ROW
LAN - GATE	UDP	192.168.0.2	6404	204.71.202.160	80		1
GATE - NET	UDP	142.140.3.6	10425	204.71.202.160	80		2
NET- GATE	UDP	204.71.202.160	80	142.140.3.6	10425		3
GATE - LAN	UDP	204.71.202.160	80	192.168.0.2	6404		4
LAN - GATE	ISAKMP-1	192.168.0.2	500	204.71.202.160	500		5
GATE - NET	ISAKMP-1	142.140.3.6	500	204.71.202.160	500		6
NET- GATE	ISAKMP-2	204.71.202.160	500	142.140.3.6	500		7
GATE - LAN	ISAKMP-2	204.71.202.160	500	192.168.0.2	500		8
LAN - GATE	ISAKMP-3	192.168.0.2	500	204.71.202.160	500		9
GATE - NET	ISAKMP-3	142.140.3.6	500	204.71.202.160	500		10
NET- GATE	ISAKMP-4	204.71.202.160	500	142.140.3.6	500		11
GATE - LAN	ISAKMP-4	204.71.202.160	500	192.168.0.2	500		12
LAN - GATE	ISAKMP-5	192.168.0.2	500	204.71.202.160	500		13
GATE - NET	ISAKMP-5	142.140.3.6	500	204.71.202.160	500		14
NET - GATE	ISAKMP-6	204.71.202.160	500	142.140.3.6	500		15
GATE - LAN	ISAKMP-6	204.71.202.160	500	192.168.0.2	500		16

FIG. 6A

FIG. 6

FIG. 6A
FIG. 6B

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LAN - GATE	ESP (50)	192.168.0.2	204.71.202.160	4859	17
GATE - NET	ESP (50)	142.140.3.6	204.71.202.160	4859	18
NET- GATE	ESP (50)	204.71.202.160	142.140.3.6	9802	19
GATE - LAN	ESP (50)	204.71.202.160	192.168.0.2	9802	20
LAN - GATE	ESP (50)	192.168.0.2	204.71.202.160	4859	21
GATE - NET	ESP (50)	142.140.3.6	204.71.202.160	4859	22
NET- GATE	ESP (50)	204.71.202.160	142.140.3.6	9802	23
GATE - LAN	ESP (50)	204.71.202.160	192.168.0.2	9802	24
LAN - GATE	ESP (50)	192.168.0.2	204.71.202.160	14662	25
GATE - NET	ESP (50)	142.140.3.6	204.71.202.160	14662	26
NET- GATE	ESP (50)	204.71.202.160	142.140.3.6	3288	27
GATE - LAN	ESP (50)	204.71.202.160	192.168.0.2	3288	28
LAN - GATE	ESP (50)	192.168.0.2	204.71.202.160	14662	29
GATE - NET	ESP (50)	142.140.3.6	204.71.202.160	14662	30
NET - GATE	ESP (50)	204.71.202.160	142.140.3.6	3288	31
GATE - LAN	ESP (50)	204.71.202.160	192.168.0.2	3288	32

FIG. 6B

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FIG. 7

FIG. 7A
FIG. 7B
FIG. 7C

SEQUENCE OF PACKETS THROUGH GATEWAY

MULTIPLE LOCAL MACHINES -- MULTIPLE TARGETS

PATH	PACKET TYPE	SOURCE ADDRESS IP	SOURCE ADDRESS SERVICE	DESTINATION ADDRESS	DESTINATION ADDRESS SERVICE	SPI	ACTIVE PROCESS	ROW
LAN - GATE	UDP	192.168.0.2	6404	204.71.202.160	80		L-1 OUT	1
GATE - NET	UDP	142.140.3.6	10425	204.71.202.160	80		T-1 IN	2
LAN - GATE	UDP	192.168.0.4	4562	207.46.131.137	1353		L-2 OUT	3
GATE - NET	UDP	142.140.3.6	37525	207.46.131.137	1353		T-2 IN	4
NET- GATE	UDP	204.71.202.160	80	142.140.3.6	10425		T-1 OUT	5
GATE - LAN	UDP	204.71.202.160	80	192.168.0.2	6404		L-1 IN	6
NET - GATE	UDP	207.46.131.137	1353	142.140.3.6	37525		T-2 OUT	7
GATE - LAN	UDP	207.46.131.137	1353	192.168.0.4	4562		L-2 IN	8
LAN - GATE	ISAKMP-1	192.168.0.2	500	204.71.202.160	500		L-1 OUT - PORT 500 BOUND TO 192.168.0.	9
GATE - NET	ISAKMP-1	142.140.3.6	500	204.71.202.160	500		T-1 IN - ASSOCIATED WITH 204.71.202.160	10
NET- GATE	ISAKMP-2	204.71.202.160	500	142.140.3.6	500		T-1 OUT	11
GATE - LAN	ISAKMP-2	204.71.202.160	500	192.168.0.2	500		L-1 IN - PORT 500 RELEASED	12
LAN - GATE	ISAKMP-3	192.168.0.2	500	204.71.202.160	500		L-1 OUT - PORT 500 BOUND TO 192.168.0.	13
GATE - NET	ISAKMP-3	142.140.3.6	500	204.71.202.160	500		T-1 IN - ASSOCIATED WITH 204.71.202.160	14
LAN - GATE	ISAKMP-1	192.168.0.3	500	207.158.227.235	500		L-3 OUT	15
GATE - NET	ISAKMP-1	142.140.3.6	500	207.158.227.235	8773		T-3 IN - PORT 500 NOT AVAILABLE	16

FIG. 7A

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NET- GATE	ISAKMP-4	204.71.202.160	500	142.140.3.6	500		T-1 OUT	17
GATE - LAN	ISAKMP-4	204.71.202.160	500	192.168.0.2	500		L-1 IN - PORT 500 RELEASED	18
LAN - GATE	ISAKMP-1	192.168.0.3	500	207.158.227.235	500		L-3 OUT	19
GATE - NET	ISAKMP-1	142.140.3.6	500	207.158.227.235	500		T-3 IN - PORT 500 BOUND TO 192.168.0.3	20
LAN - GATE	ISAKMP-5	192.168.0.2	500	204.71.202.160	500		L-1 OUT - PORT 500 NOT AVAILABLE	21
GATE - NET	ISAKMP-5	142.140.3.6	500	204.71.202.160	9063		T-1 IN - SOURCE PORT ADDRESS TRANSLATED	22
NET - GATE	ISAKMP-2	207.158.227.235	500	142.140.3.6	500		T-3 OUT	23
GATE - LAN	ISAKMP-2	207.158.227.235	500	192.168.0.3	500		L-3 IN - PORT 500 RELEASED	24
LAN - GATE	ISAKMP-5	192.168.0.2	500	204.71.202.160	500		L-1 OUT - PORT 500 BOUND TO 192.168.0.	25
GATE - NET	ISAKMP-5	142.140.3.6	500	204.71.202.160	500		T-1 IN - ASSOCIATED WITH 204.71.202.160	26
							TIME-OUT FOR T-1 OUT--PORT 500 RELEASED	27
LAN - GATE	ISAKMP-3	192.168.0.3	500	207.158.227.235	500		L-3 OUT	28
GATE - NET	ISAKMP-3	142.140.6.3	500	207.158.227.235	500		T-3 IN - PORT 500 BOUND TO 192.168.0.3	29
NET - GATE	ISAKMP-6	204.71.202.160	500	142.140.3.6	500		T-1 OUT - PORT 500 BLOCKED	30
							T-1 OUT - PACKET IGNORED	31
NET- GATE	ISAKMP-4	207.158.227.235	500	142.140.3.6	500		T-3 OUT	32
GATE - LAN	ISAKMP-4	207.158.227.235	500	192.168.0.3	500		L-3 IN - PORT 500 RELEASED	33
LAN - GATE	ISAKMP-5	192.168.0.2	500	204.71.202.160	500		L-1 OUT - PORT 500 BOUND TO 192.168.0.	34
GATE - NET	ISAKMP-5	142.140.3.6	500	204.71.202.160	500		T-1 IN - ASSOCIATED WITH 204.71.202.160	35
NET - GATE	ISAKMP-6	204.71.202.160	500	142.140.3.6	500		T-1 OUT	36
GATE - LAN	ISAKMP-6	204.71.202.160	500	192.168.0.2	500		L-1 IN - PORT 500 RELEASED	37
LAN - GATE	ESP (50)	192.168.0.2		204.71.202.160		4859	L-1 OUT	38
GATE - NET	ESP (50)	142.140.3.6		204.71.202.160		4859	T-1 IN	39

FIG. 7B

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LAN - GATE	UDP	192.168.0.4	4562	207.46.131.137	1353		L-2 OUT	40
GATE - NET	UDP	142.140.3.6	37525	207.46.131.137	1353		T-2 IN	41
NET - GATE	ESP (50)	204.71.202.160		142.140.3.6		9802	T-1 OUT	42
GATE - LAN	ESP (50)	204.71.202.160		192.168.0.2		9802	L-1 IN	43
LAN - GATE	ISAKMP-5	192.168.0.3	500	207.158.227.235	500		L-3 OUT- PORT 500 BOUND TO 192.168.0.3	44
GATE - NET	ISAKMP-5	142.140.6.3	500	207.158.227.235	500		T-3 IN - ASSOCIATED WITH 207.158.227.23	45
LAN - GATE	ESP (50)	192.168.0.2		204.71.202.160		4859	L-1 OUT	46
GATE - NET	ESP (50)	142.140.3.6		204.71.202.160		4859	T-1 IN	47
NET - GATE	ISAKMP-6	207.158.227.235	500	142.140.3.6	500		T-3 OUT	48
GATE - LAN	ISAKMP-6	207.158.227.235	500	192.168.0.3	500		L-3 IN - PORT 500 RELEASED	49
NET - GATE	UDP	207.46.131.137	1353	142.140.3.6	37525		T-2 OUT	50
GATE - LAN	UDP	207.46.131.137	1353	192.168.0.4	4562		L-2 IN	51
LAN - GATE	ESP (50)	192.168.0.3		207.158.227.235		38935	L-3 OUT	52
GATE - NET	ESP (50)	142.140.6.3		207.158.227.235		38935	T-3 IN	53
NET - GATE	ESP (50)	204.71.202.160		142.140.3.6		9802	T-1 OUT	54
GATE - LAN	ESP (50)	204.71.202.160		192.168.0.2		9802	L-1 IN	55
NET - GATE	ESP (50)	207.158.227.235		142.140.3.6		7753	T-3 OUT	56
GATE - LAN	ESP (50)	207.158.227.235		192.168.0.3		7753	L-3 IN	57

FIG. 7C

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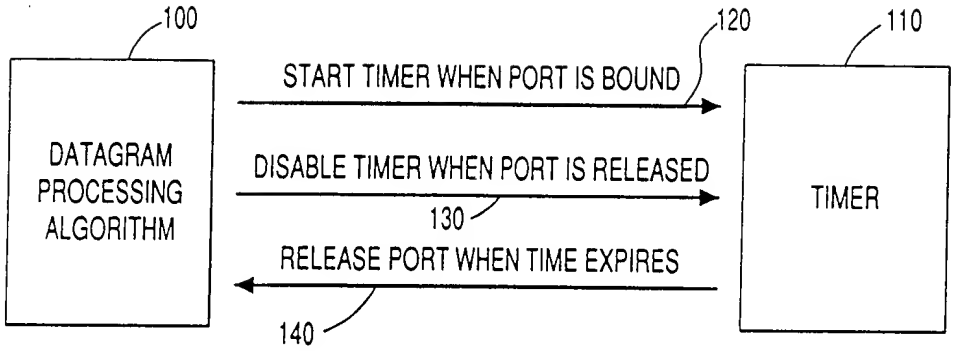

FIG. 8